Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington D.C. 20554

In the matter of:	)	
	)	
Unlicensed Operation in the TV Broadcast Bands	)	ET Docket No. 04-186
	)	
	)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	)	ET Docket No. 02-380
	)	

COMMENTS OF

James Stoffo, RF Engineer

INTRODUCTION

My occupation as an on site RF field engineer is to ensure the successful performance and operation of low power RF microphones and intercommunications systems at live broadcast television special events. I have been the on site RF engineer on the last eight Super Bowls, several Latin Billboard Award shows, Latin Grammy Awards and Rockefeller Center Tree Lightings to name a few.

If the NPRM regarding unlicensed device use in the unused TV spectrum continues along its current path, it will very likely become impossible for low power devices to function. Wireless microphones are used in every facet of production both on camera and off. Everyone has seen the referee at a football game speak on a wireless microphone to make a play call. What is not as obvious are the dozens of wireless communications used by the coaches at every game.

DISCUSSION

Each stage production, be it a Broadway musical or a live TV show, uses dozens of wireless intercom systems for back stage movements of staging, audio and lighting cues and safety control of large moving objects such as set pieces. A typical television special event involves a minimum of 100 frequencies. These may be divided among the wireless microphones, intercoms and artist and talent cueing systems. On an event like the Super Bowl, there are well over 1,000 RF devices transmitting in the same stadium at the same time.

In most cases, the RF devices used ARE the show and without them, the American public would have no television show to watch! These devices all operate in the unused television channels for that city. Each time a production begins in a new city, I analyze the TV spectrum for that city and coordinate the required number of low power RF devices based on the existing high power transmitters in the area.

With the advent of DTV, wireless microphones and intercom systems have less spectrum to operate in. In many cases, this may be a safety risk as communications are used for cuing of

large set piece movement. It is becoming increasingly more difficult to operate large numbers of systems on a television production simply because of the spectrum congestion brought on by DTV.

Television broadcast events depend on wireless microphone, intercom and monitoring systems. Every news reporter, TV show host, musician, performing artist, sportscaster or referee uses RF devices to bring the information to the public. A large musical production such as the Grammy Award show may use forty wireless microphones, up to 100 wireless intercom systems and twenty-four RF monitor systems for the artist to hear the program audio.

All of these devices are in the UHF television spectrum on unused TV channels. Interference onto these devices could damage the hearing of the artist, cause loud noise bursts onto the sound carrier of the broadcast or create safety issues that may result in death or serious injury to back stage personnel.

In the introduction of FCC docket 04-113, the FCC states that it proposes to allow the use of unlicensed devices "to operate in the broadcast television spectrum at locations where that spectrum is not being used". After twenty-five years of RF experience and working in the live television business, there is no such place in any major city in the United States. The conclusions made in the NPRM are incorrect in that every portion of unused TV spectrum IS being used already for these production devices.

Every large corporate meeting, most religious houses of worship and many schools all use wireless systems in the unused television spectrum. Wireless microphones are used in film production and advertisement production. Should this NPRM proceed, the FCC would cause the professional audio and TV production business to technically regress to the point that it was forty years past. Wireless devices have been part of the production community since the early 1960s. The community has developed a dependency on this equipment.

The negative impact on the advertising and entertainment communities is obvious. Live AND pre-taped broadcast production would be impacted forever should the FCC follow its current path. Though I am a small voice, the entertainment industry leaders in Hollywood and New York would immediately cry with a much louder voice after these changes affect our community. By then, the FCC will have already made irreversible changes to the TV spectrum. Advertising costs would skyrocket and revenue streams would be affected negatively.

Most wireless microphone and intercom systems sold in the United States are using FM technology with under 50 milliwatts of power. These factors mean that all other higher power devices will cause loud noise bursts should interference occur. The majority of wireless microphone and intercom systems in the United States are sold in the TV 14 through 69 bands. I have already established real world data that shows a marked increase in wireless systems failures since the advent of DTV.

DTV and public safety re-allocations alone are forcing the wireless spectrum to operate in 25% of its previous available spectrum. Any further choking will create an economic backlash, which must be considered. Allocations for spectrum within the TV band must remain protected. Unused TV spectrum band should remain open for current use in each city. Unused TV channels are already jam packed with other activity.

In live broadcast production, only a small geographical area is impacted by local use. This is due to the low transmitter power and high receiver sensitivity specifications. This is why

there may be ten Broadway musicals simultaneously within a two-city block area of Manhattan. Each stage may have eighty wireless systems in operation, yet there is no interference. All of these devices operate in the unused TV spectrum for each city.

The NPRM discussed using a beacon transceiver for frequency control. To some extent, this is being done by local frequency coordinators. Though the beacon may be a part of the answer, it is more important that any new unlicensed devices intended for use within the TV spectrum have a sensing capability. As part of type acceptance, these devices must be passive until the unit senses that no other RF is present in the spectrum.

CONCLUSIONS

In summary, as an engineer with over twenty-five years of experience, I have a unique perspective on the RF operations at large special event productions. Wireless microphones and intercommunications systems completely fill the unused TV spectrum in most major cities.

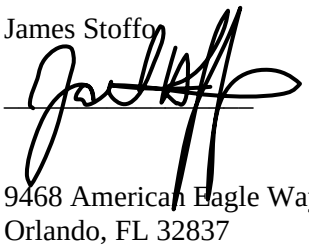
For a music production, these systems ARE the entertainment broadcast. Other systems are used for safety and cannot fail during a production. Introduction of further congestion would force the entertainment community to technically regress to the state that it was in forty years ago. The economic impact to the live television production community would be negative. Industry leaders would more than likely take action.

Any unlicensed devices in the TV spectrum must contain safeguards to prevent interference with existing systems. New type acceptance should include a passive listen sensing receiver to prevent transmitting onto local low power users. The FCC should consider reserving several unused TV channels in each major city for the use of wireless microphones and intercommunications systems.

Of particular importance are the power output limitations imposed on all unlicensed devices. These should be limited to less than 50 milliwatts to prevent interference onto safety communications. The unused TV spectrum is already overcrowded in large cities. Additional congestion will make it impossible for low power wireless microphones and intercommunications to function unless safeguards are implemented.

Respectfully submitted,

James Stoffo



9468 American Eagle Way STE 100
Orlando, FL 32837

November 30, 2004